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(73) Proprietor: KABUSHIKI KAISHA TOYOTA CHUO KENKYUSHO
41-1, Aza Yokomichi Oaza Nagakute
Nagakute-cho
Aichi-gun Aichi-ken, 480-11 (JP)

(72) Inventor: Sugiyama, Katsuhiko
7-84, Aza Ikuiba Oaza Morioka Higashiura-cho
Chita-gun Aichi-ken, 470-21 (JP)
Inventor: Kawazoe, Hiromitsu
39, Aza Tsuchikujiri Oaza Inokoshi Idaka-cho
Meito-ku Nagoya-shi Aichi-ken, 465 (JP)
Inventor: Idota, Yoshinori
1-51 Suyama-cho Mizuho-ku
Nagoya-shi Aichi-ken, 467 (JP)

(74) Representative: Patentanwälte Viering & Jentschura
Steinsdorfstrasse 6
W-8000 München 22 (DE)

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Description

This invention relates to an inlet port for an internal combustion engine which has an inlet hole opened on the end face of a cylinder chamber at an off-center position, the inlet hole being provided with an inlet valve and connected to an inlet passage comprising a swirl generating section connected to said inlet hole.

The purpose of the swirl generating section is to inpart an air vortex to the inflowing combustion air, the vortex continuing to circulate in the cylinder chamber in order to attain a favorable formation of gas mixture.

Such an inlet port is disclosed in FR-A-2 427 478, comprising a swirl generating section coaxially surrounding the valve stem and an inclined inlet passage above the inlet hole to constitute a spiral path for the inflowing air in cooperation with the wall of the swirl generating section. The height of the dome-like ceiling of the swirl generating section is constant around the valve stem. In another prior art inlet port of the kind as described in the introduction part of claim 1 (US-A-30 20 899) the spiral shaped swirl generating section opens into the inlet hole via a circular additional passage which is directed to the cylinder axis and slopes toward the inlet hole.

An object of the invention is to provide for an internal combustion engine an inlet port, which provides little pressure loss in the swirl generating section and high volume efficiency in the cylinder chamber.

According to the invention this object is attained by the features according to claim 1. Preferred embodiments of the invention are subject-matter of the subclaims.

The inlet port of the invention can generate a strong swirl under high volume efficiency, as afterward shown clearly by the experimental results.

Brief description of the drawings

Fig. 1 is a plan view of an inlet port of the first embodiment of the present invention ;
Fig. 2 is a sectional view along line II-II of Fig. 1 ;
Fig. 3 is a sectional view along line III-III of Fig. 1;
Fig. 4 is a graph indicating the relation between the swirl ratio SR or the pressure loss ΔP and the width ratio w_1/w_2, in regard to the inlet port as shown in Fig. 1 ;
Fig. 5 is a plan view of an inlet port of the second embodiment of the invention ;
Fig. 6 is a sectional view along line VI-VI of Fig. 5 ;
Fig. 7 is a graph indicating the relation between the swirl ratio SR or the pressure loss ΔP and a dimensionless off-center distance e/d, in regard to the inlet port as shown in Fig. 5 ;
Fig. 8 is a graph indicating the relation between the swirl ratio SR or the pressure loss ΔP and a connecting angle α, in regard to the inlet port as shown in Fig. 5 ;
Fig. 9 is a graph indicating the relation between the swirl ratio SR or the pressure loss ΔP and a dimensionless distance l/d, in regard to the inlet port as shown in Fig. 5 ; and
Fig. 10 is a graph indicating the relation between the swirl ratio SR or the pressure loss ΔP and a dimensionless minimum width w/d, in regard to the inlet port as shown in Fig. 5.

Detailed description of the preferred embodiments

First embodiment (Figs. 1 through 4)

An inlet port for an internal combustion engine in the first embodiment, as shown in Figs. 1 through 3, has a circular inlet hole 12 opened on a circular end face of a cylinder chamber 11 at an off-center position from its center towards the wall side. The inlet hole 12 is provided with an inlet valve 13 of popped valve type and connected to an inlet passage 15. The inlet passage 15 comprises a swirl generating section 16 which is connected to the inlet hole 12 and surrounds the inlet valve 13 at the end section of the inlet passage and an introducing section 19 which is the remaining section of the inlet passage excluding the end section. The wall surface of the swirl generating section 16 is formed by smoothly connecting two cylindrical surfaces facing to the peripheral surface of the valve stem 14. The width between the peripheral surface of the valve stem 14 and the wall surface of the swirl generating section 16 is wider at the outside part 17 on the wall side of the cylinder chamber 11 than at the inside part 18 on the center side of the cylinder chamber 11. The width is decreased gradually from the outside part 17 to the inside part 18 around the valve stem 14. The introducing section 19 is connected to the wider outside part 17 of the swirl generating section 16 along its tangential direction. The height from the opening face of the inlet hole 12 to the ceiling of the swirl generating section 16 is constant. In the plane which insersects perpendicularly to the center line of the introducing section 19 within the parallel plane to the opening face of the inlet hole 12 and includes the center axis of the valve stem 14, the width, w_1, of the outside part 17 of the swirl generating section 16 is set to not less than 1.1 times and not more than 2.8 times as large as the width, w_2, of the inside part 18, specifically speaking $w_1 = 17.25$ mm, $w_2 = 14.25$ mm and $w_1/w_2 = 1.21$.

In this inlet port, the inlet air-stream through the inlet passage 15 flows from the introducing section 19 into the swirl generating section 16 and further flows through the inlet hole 12 into the cylinder chamber 11. The main stream of the inlet air flows from the center position of the introducing section 19 into the middle position between the wall surface of the outside part 17 of the swirl generating section 16 and the peripheral surface of the valve stem 14 and further flows through the inlet hole 12 to the cylinder chamber 11 along the tangential direction of the wall surface in the vicinity of the inlet hole 12 so as to produce the swirl circling along the wall surface of the cylinder chamber 11.

In the inlet port of this embodiment, the ratio w_1/w_2 of the width of the outside part 17 and the inside part 18 was set to various values and then the strength of the swirl generating in the cylinder chamber 11, that is, the swirl ratio SR and the pressure loss ΔP of the inlet passage 15 were measured for each value of the width ratio w_1/w_2. The results are shown in the graph of Fig. 4. As shown in the upper section or lower of the graph, the swirl ratio SR becomes small and the pressure loss ΔP becomes large when the width ratio w_1/w_2 is less than 1.1 or more than 2.8. The swirl ratio SR becomes larger and the pressure loss ΔP becomes smaller when the width ratio w_1/w_2 is not less than 1.1 and not more than 2.8 ; and the strong swirl is generated under the high volume efficiency. Besides the better performance can be obtained when the width ratio w_1/w_2 is not less than 1.15 and not more than 2.0.

Second embodiment (Figs. 5 through 10)

An inlet port for an internal combustion engine in the second embodiment, as shown in Figs. 5 and 6, is composed similarly to that in the first embodiment. Moreover the center axis of the cylinder surface constituting the wall surface of the inside part 18 of the swirl generating section 16 coincides with the center axis of the inlet hole 12, while the center axis of the cylinder surface constituting the wall surface of the outside part 17 is off-centered from the center axis of the inlet hole 12 towards the wall surface of the outside part 17. The distance of the off-center, e, is set to not less than 2% and not more than 50% of the diameter, d, of the inlet hole 12. The connecting angle between the outside part 17 and the introducing section 19 is set to an angle so that the main inlet stream from the introducing section 19 to the outside part 17 flows in between the wall surface of the outside part 17 and the peripheral surface of the valve stem 14 of the inlet valve 13. The distance, l, from the center axis of the inlet hole 12 to the center line of the introducing section 19 is set to not less than 20% and not more than 60% of the diameter, d, of the inlet hole 12. The introducing section 19 which has a rectangular cross section is formed in taper, and the minimum width, w, of the introducing- section is set to not less than 25% and not more than 85% of the diameter, d, of the inlet hole 12.

In this inlet port, the inlet air-stream through the inlet passage 15 flows from the introducing section 19 into the swirl generating section 16 and further flows through the inlet hole 12 into the cylinder chamber 11. The main stream of the inlet air flows from the center position of the introducing section 19 into the middle position between the wall surface of the outside part 17 of the swirl generating section 16 and the peripheral surface of the valve stem 14 and further flows through the inlet hole 12 to the cylinder chamber 11 along the tangential direction of the wall surface in the vicinity of the inlet hole 12 so as to produce the swirl circling along the wall surface of the cylinder chamber 11. As a result, the strong swirl is generated under the high volume efficiency.

Experiment 1

In the inlet port of the embodiment, the off-center distance, e, at which the center axis of the cylinder surface constituting the wall surface of the outside part 17 of the swirl generating section 16 is off-centered from the center axis of the inlet hole 12 towards the wall surface of the outside part 17, is set to various values with respect to the diameter, d, of the inlet hole 12. The strength of the swirl generating in the cylinder 11, that is, the swirl ratio SR and the pressure loss ΔP of the inlet passage 15 were measured for each value of the off-center distance e. The results are shown by the solid line in the graph of Fig. 7. As is clearly seen from the upper section or lower of the graph, the swirl ratio SR is smaller and the pressure loss ΔP is larger, when the dimensionless off-center distance e/d is more than 0.5. Meanwhile the swirl ratio SR is smaller and the pressure loss ΔP is larger as the dimensionless off-center distance e/d is decreasing to less than 0.1. The decreasing rate of the swirl ratio SR and the increasing rate of the pressure loss ΔP become larger when the dimensionless off-center distance e/d is less than 0.02. Therefore, the swirl ratio SR is large and the pressure loss ΔP is small, when the dimensionless off-center distance e/d is not less than 0.02 and not more than 0.5 ; the strong swirl is generated under the high volume efficiency. Besides the better performance is acquired when the dimensionless off-center distance e/d is not less than 0.03 and not more than 0.3.

In addition, as shown by the broken line in Fig. 7, the performance gets worse and the swirl ratio SR rapidly decreases and the pressure loss ΔP increases in the range of the dimensionless off-center e/d being less than 0.1, when the connecting angle between the outside part 17 and the introducing section 19 is set to an angle except the angle at which the main stream of the inlet air, passing from the introducing section 19 to the outside part 17, flows in between the wall surface of the outside part 17 and the peripheral surface of the valve stem 14.

Furthermore, the connecting angle, α, between the outside part 17 and the introducing section 19 is set to various values and the swirl ratio SR and the pressure loss ΔP were measured for each value of the angle α. The results are shown in the graph of Fig. 8.

Only, as a matter of convenience, the connecting angle, α, is, as shown in Fig. 5, the angle between the center line of the introducing section 19 and the connecting plane which contains both the connecting line of the wall surface of the inside part 18 to the inside wall of the introducing section 19, and the intersection line formed by the wall surface of the outside part 17 or the outside wall of the introducing section 19 and the plane rotating in 60 degrees around the center axis of the inlet hole 12 towards the outside part 17 from the plane containing the connecting line and the center axis of the inlet hole 12.

As shown in the upper section or the lower of the graph of Fig. 8, the swirl ratio SR is much smaller and the pressure loss ΔP is larger when the connecting angle, α, is more than 135°. The swirl gets weaker because the main stream of the inlet air, which flows into the swirl generating section 16 from the introducing section 19, collides against the valve stem 14. Accordingly, the swirl ratio SR is large and the pressure loss ΔP is small when the connecting angle, α, is 135° or less. Besides the better performance is acquired when the connecting angle, α, is 110° or less. On the contrary the swirl ratio SR drastically decreases and the pressure loss ΔP increases when the connecting angle, α, is less than 15° ; the swirl gets weaker because a part of the main stream of the inlet air, which flows into the outside part 17 of the swirl generating section 16 from the introducing section 19, collides against the wall surface of the outside part 17. Accordingly the swirl ratio SR is large and the pressure loss ΔP is small when the connecting angle, α, is set to the degree at which the main stream of the inlet air from the introducing section 19 to the outside part 17 flows in between the wall surface of the outside part 17 and the peripheral surface of the valve stem 14.

Experiment 2

In the inlet port of the embodiment, the distance, l, from the center axis of the inlet hole 12 to the center line of the introducing section 19 is set to various values with respect to the diamenter, d, of the inlet hole 12. The swirl ratio SR and the pressure loss ΔP were measured for each value of the distance l. The results are shown in the graph of Fig. 9. As the upper section or the lower of the graph shows, the swirl ratio SR is smaller and the pressure ΔP is larger when the dimensionless distance l/d is more than 0.6 or less than 0.2. Accordingly the swirl ratio SR is larger and the pressure loss ΔP is smaller when the dimensionless distance l/d is not less than 0.2 and not more than 0.6.

The minimum width, w, of the introducing section 19 formed in taper is set to various values with respect to the diameter, d, of the inlet hole 12. The swirl ratio SR and the pressure loss ΔP were measured for each value of the minimum width w. The results are shown in the graph of Fig. 10. As the upper section or the lower of the graph shows, the swirl ratio SR is smaller and the pressure loss ΔP is larger when the dimensionless minimum width w/d is more than 0.85 or less than 0.25. Accordingly, the swirl ratio SR is larger and the pressure loss ΔP is smaller when the minimum width w/d is not less than 0.25 and not more than 0.85.

Claims

1. An inlet port for an internal combustion engine comprising an inlet hole (12) at the end face of a cylinder chamber (11) at an off-center position ; an inlet valve (13) positioned in said inlet hole (12) and having a valve stem (14) ; an inlet passage (15) comprising a swirl generating section (16) which has a ceiling and a peripheral wall surface and is connected to said inlet hole (12) and surrounds said inlet valve (13), and an introducing section (19) comprising the remaining portion of said inlet passage (15) ; said swirl generating section (16) comprising an outside part (17) positioned on the wall side of said cylinder chamber (11) and an inside part (18) smoothly connected to said outside part (17) and positioned on the center side of said cylinder chamber (11) ; said outside part (17) being connected to said introducing section (19) ; the width of the outside part (17) of the swirl generating section (16) gradually decreasing toward the inside part (18), said inside part (18) communicating directly also with said introducing section (19), characterized in that the height from said inlet hole (12) to said ceiling of said swirl generating section (16) is constant along the swirl generating section ; and that the peripheral walls of the outside part (17) and the inside part (18) each extend along a cylinder surface, the cylinder surfaces along the outside part (17) and the inside part (18) each are substantially parallel to the axis of said valve stem (14), the axis of the cylinder surface along the inside part (18) coinciding with that of the inlet hole (12) while the axis of the cylinder surface along the outside part (17) being offset toward the wall surface of the cylinder chamber (11) in such a way that the ratio of the width (w_1) between the peripheral surface of said valve stem (14) and the wall surface of the outside part (17) of the swirl generating section (16) as measured in a plane perpendicular to the center line of said introducing section (19) and in a plane parallel to said inlet hole (12), and the width (w_2) measured in the same planes at the inside part (18) of the swirl generating section (16) is not less than 1.1 and not more than 2.8 and the main part of the inlet air stream flows from the introducing section (19) into the outside part (17) of swirl generating section (16).

2. An inlet port according to claim 1, charac-

terized in that an outside wall surface and an inside wall surface of said introducing section (19), each are straight surfaces, the inside wall surface of said introducing section (19) is disposed so that its extension adjoins substantially the outside portion of the peripheral surface of said valve stem (14), and the peripheral wall of the outside part (17) is disposed inwards of the wall surface of the cylinder chamber (11).

3. An inlet port according to claim 2, characterized in that in said plane, the width (w_1) of the outside part (17) of the swirl generating section is set to not less than 1.15 times and not more than 2.0 times as large as the width (w_2) of the inside part (18).

4. An inlet port according to claim 2, characterized in that the off-center distance (e) of the center axis of the cylinder surface constituting the wall surface of the outside part (17) from the center axis of the inlet hole (12) towards the wall surface of the outside part (17) is set to not less than 2% and not more than 50% of the diameter of the inlet hole (12), and the connecting angle (α) between the outside part (17) and the introducing section (19) is set to an angle so that the main inlet stream from the introducing section (19) to the outside part (17) flows in between the wall surface of the outside part (17) and the peripheral surface of the valve stem (14).

5. An inlet port according to claim 4, characterized in that said off-center distance (e) is not less than 3% and not more than 30% of the diameter of the inlet hole (12).

6. An inlet port according to claim 4 characterized in that the distance (l) from the center axis of the inlet hole (12) to the center line of the introducing section (19) is set to not less than 20% and not more than 60% of the diameter of the inlet hole (12).

7. An inlet port according to claim 4, or 6 characterized in that the introducing section (19) is tapered towards the swirl generating section (16) and the minimum width (w) at the tapered portion is set to not less than 25% and not more than 85% of the diameter of the inlet hole (12).

Ansprüche

1. Einlaß für eine Brennkraftmaschine mit einer an einer dezentrierten Stelle in der Stirnseite einer Zylinderkammer (11) befindlichen Einlaßöffnung (12) ; einem Einlaßventil (13), das sich in dieser Einlaßöffnung (12) befindet und mit einem Schaft (14) versehen ist ; einem Einlaßkanal (15), der einen wirbelerzeugenden Bereich (16), der mit einer Decke und einer Umfanqswandung versehen ist und mit der Einlaßöffnung (12) verbunden ist und das Einlaßventil (13) umgibt, und einen Einlaßbereich (19) enthält, der den restlichen Teil des Einlaßkanales (16) bildet ; wobei der wirbelerzeugende Bereich (16) einen Außenteil (17), der sich an der Wandseite der Zylinderkammer (11) befindet, und einen Innenteil (18) aufweist, der der Mitte der Zylinderkammer (11) zugewandt ist und in den Außenteil (17) übergeht ; wobei der Außenteil (17) mit dem Einlaßbereich (19) verbunden ist, die Weite des Außenteils (17) des wirbelerzeugenden Bereichs (16) in Richtung auf den Innenteil (18) stetig abnimmt und der Innenteil (18) direkt auch mit dem Einlaßbereich (19) kommuniziert, dadurch gekennzeichnet, daß die Höhe von der Einlaßöffnung (12) bis zu der Decke des wirbelerzeugenden Bereichs (16) entlang des wirbelerzeugenden Bereichs konstant ist und daß sich die Umfangswandungen des Außenteils (17) und des Innenteils (18) jeweils entlang einer zylindrischen Fläche erstrecken, wobei diese zylindrischen Flächen entlang dem Außenteil (17) und dem Innenteil (18) jeweils im wesentlichen parallel zu der Achse des Ventilschaftes (14) sind und die Achse der zylindrischen Fläche entlang des Innenteils (18) mit der der Einlaßöffnung (12) zusammenfällt, während die Achse der zylindrischen Fläche entlang des Außenteils (17) gegen die Wandung der Zylinderkammer (11) derart versetzt ist, daß das Verhältnis der Breite (w1) zwischen der Umfangswandung des Ventilschaftes (14) und der Wandung des Außenteils (17) des wirbelerzeugenden Bereiches (16), gemessen in einer Ebene senkrecht zur Mittellinie des Einlaßbereiches (19) und in einer Ebene parallel zu der Einlaßöffnung (12), zur in denselben Ebenen am Innenteil (18) gemessenen Weite (w2) des wirbelerzeugenden Bereichs nicht weniger als 1,1 und nicht mehr als 2,8 ist und der Hauptteil des einfließenden Luftstroms von dem Einlaßbereich (19) in den Außenteil (17) des wirbelerzeugenden Bereiches (16) strömt.

2. Einlaß nach Anspruch 1, dadurch gekennzeichnet, daß eine Außenwandung und eine Innenwandung des Einlaßbereichs (19) jeweils geradlinige Oberflächen sind, wobei die Innenwandung des Einlaßbereichs (19) derart angeordnet ist, daß ihre Verlängerung im wesentlichen an den Außenteil der Umfangsfläche des Ventilschafts (14) anschließt, und die Umfangswandung des Außenteils (17) einwärts der Wandung der Zylinderkammer (11) angeordnet ist.

3. Einlaß nach Anspruch 2, dadurch gekennzeichnet, daß in der oben bezeichneten Ebene die Weite (w1) des Außenteils (17) des wirbelerzeugenden Bereiches nicht weniger als das 1,15-fache und nicht mehr als das 2-fache der Weite (w2) des Innenteils (18) beträgt.

4. Einlaß nach Anspruch 2, dadurch gekennzeichnet, daß der Dezentrierungsabstand (e) der Mittelachse der die Wandung des Außenteils (17) bildenden Zylinderfläche von der Mittelachse der Einlaßöffnung (12) zur Wandung des Außenteils (17) nicht weniger als 2% und nicht mehr als 50% des Durchmessers der Einlaßöffnung (12) beträgt, und

der Winkel (a) zwischen dem Außenteil (17) und dem Einlaßbereich (19) so bemessen ist, daß der Haupteinlaßstrom von dem Einlaßbereich (19) zum Außenteil (17) zwischen der Wandung der Außenseite (17) und der Umfangsfläche des Ventilschaftes (14) fließt.

5. Einlaß nach Anspruch 4, dadurch gekennzeichnet, daß der Dezentrierungsabstand (e) nicht weniger als 3% und nicht mehr als 30% des Durchmessers der Einlaßöffnung (12) ausmacht.

6. Einlaß nach Anspruch 4, dadurch gekennzeichnet, daß der Abstand (1) der Mittelachse der Einlaßöffnung (12) von der Mittellinie des Einlaßbereiches (19) nicht weniger als 20% und nicht mehr als 60% des Durchmessers der Einlaßöffnung (12) beträgt.

7. Einlaß nach Anspruch 4 oder 6, dadurch gekennzeichnet, daß der Einlaßbereich (19) sich in Richtung auf den wirbelerzeugenden Bereich (16) hin verjüngt und die Mindestweite (w) in dem verjüngten Bereich nicht weniger als 25% und nicht mehr als 85% des Durchmessers der Einlaßöffnung (12) beträgt.

Revendications

1. Conduit d'admission d'une machine à combustion interne avec un trou d'entrée (12) au plafond d'une chambre (11) cylindrique à une position décentrée ; une valve (13) d'entrée étant positionée dans le dit trou d'entrée (12) et est muni d'une manche (14) ; un passage (15) d'entrée avec une région (16) de formation de tourbillons, le dit passage ayant un cloison et un mur périphérique et étant assemblé au dit trou d'entrée (12) et entouré de la dite valve (13), et une région (19) d'introduction comprenante la section demeurante du dit passage d'entrée ; la région de formation de tourbillons comprenante une partie extérieure (17) positionée sur le mur périphérique de la chambre (11) cylindrique et une partie intérieure (18) assemblée à la partie extérieure (17) est positionée sur le front centrale de la chambre (11) cylindrique ; la partie extérieure (17) étant assemblée à la dite région d'introduction (19) ; la largeur de la partie extérieure (17) de la région (16) de formation de tourbillons diminuante graduellement dans la direction de la partie intérieure (18), la partie intérieure (18) communiquante aussi directement avec la région d'introduction (19), caractérisé en ce que la distance du trou d'entrée (12) jusqu'au plafond de la région (16) de formation de tourbillons est constante le long de la région de formation de tourbillons et que les murs périphériques de la partie extérieure (17) et de la partie intérieure (18) s'étendent le long de la surface cylindrique, ces surfaces cylindriques étant en substance respectivement en parallèle à l'axe de la manche (14) de la valve le long de la partie extérieure (17) et de la partie intérieure (18), l'axe de la surface cylindrique le long de la partie intérieure (18) coincidant avec l'axe du trou d'entrée (12), tandis que l'axe de la surface cylindrique le long de la partie extérieure (17) soit décentré dans la région du mur périphérique de la chambre (11) cylindrique de la manière que la relation de la largeur (w_1) entre la surface périphérique de la manche (14) de la valve et la surface de la partie extérieure (17) de la région (16) de formation de tourbillons mesurée dans un plan perpendiculier à la ligne centrale de la région (19) d'introduction et dans un plan parallel avec le trou d'entrée (12), et la largeur (w_2) mesurée dans les mêmes plans de la partie intérieure (18) de la région (16) de formation de tourbillons n'est plus petite que 1,1 et pas plus grande que 2,8 et que la partie principale du courant d'air de l'ouverture d'entrée coule de la région (19) d'introduction dans la partie extérieure (17) de la région (16) de formation de tourbillons.

2. Conduit d'admission selon la revendication 1, caractérisé en ce qu'une surface de la partie extérieure et une surface de la partie intérieure de la région (19) d'introduction soient respectivement des superficies rectilignes, la surface de la partie intérieure de la région (19) d'introduction étant disposée de manière que son allongement est raccordé en substance à la partie extérieure de la superficie périphérique de la manche (14) de la valve et la surface périphérique de la partie extérieure (17) est disposée en dedans de la surface de la chambre (11) cylindrique.

3. Conduit d'admission selon la revendication 2, caractérisé en ce que dans le dit plan, la largeur (w_1) de la partie extérieure (17) de la région de formation de tourbillons est mise à non moins que 1,15 fois et non plus que 2,0 fois que la largeur (w_2) de la partie intérieure (18).

4. Conduit d'admission selon la revendication 2, caractérisé en ce que la distance (e) du centre de l'axe centrale de la surface cylindrique constituante la surface de la partie extérieure (17) de l'axe centrale du trou d'entrée (12) dans la direction de la surface de la partie extérieure (17) est mise à non moins que 2% et non plus que 50% du diamètre du trou d'entrée (12), et que l'angle (a) entre la partie extérieure (17) et la région (19) d'introduction est tel que la partie principale du courant d'air de la région (19) d'introduction à la partie extérieure (17) coule entre la surface de la partie extérieure (17) et la surface périphère de la manche (14) de la valve.

5. Conduit d'admission selon la revendication 3, caractérisé en ce que la dite distance (e) du centre est non moins que 3% et non plus que 30% du diamètre du trou d'entrée (12).

6. Conduit d'admission selon la revendication 4, caractérisé en ce que la distance (1) de l'axe central du trou d'entrée (12) à la ligne centrale de la région (19) d'introduction est mise non moins que 20% et non plus que 60% du diamètre du trou d'entrée (12).

7. Conduit d'admission selon la revendication 4

ou 6, caractérisé en ce que la région (19) d'introduction diminue en diamètre dans la direction de la région (16) de formation de tourbillons et que la largeur (w) minimale dans la section la plus étroite est mise non moins que 25% et non plus que 85% du diamètre du trou d'entrée (12).

FIG.1

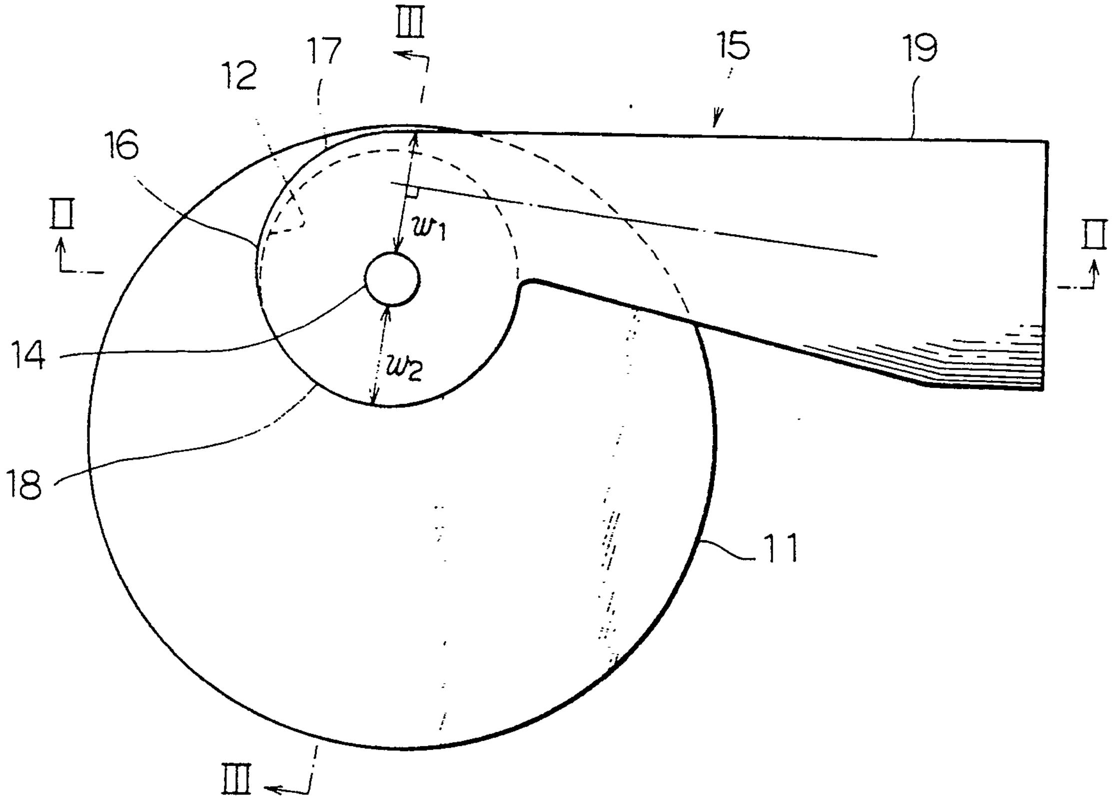

FIG.2

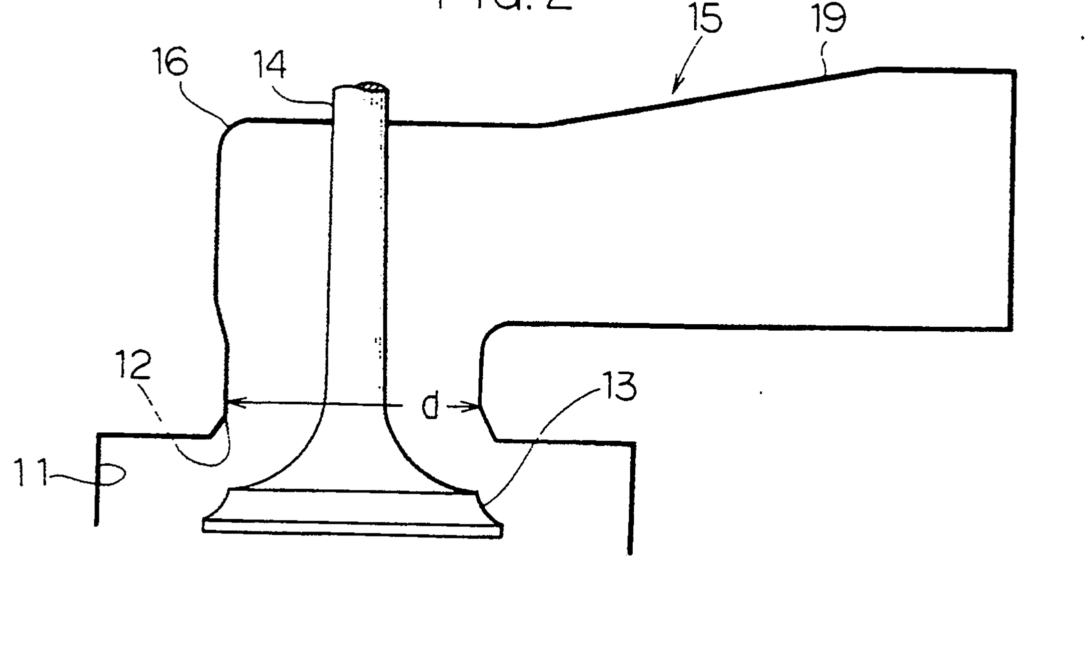

FIG.3

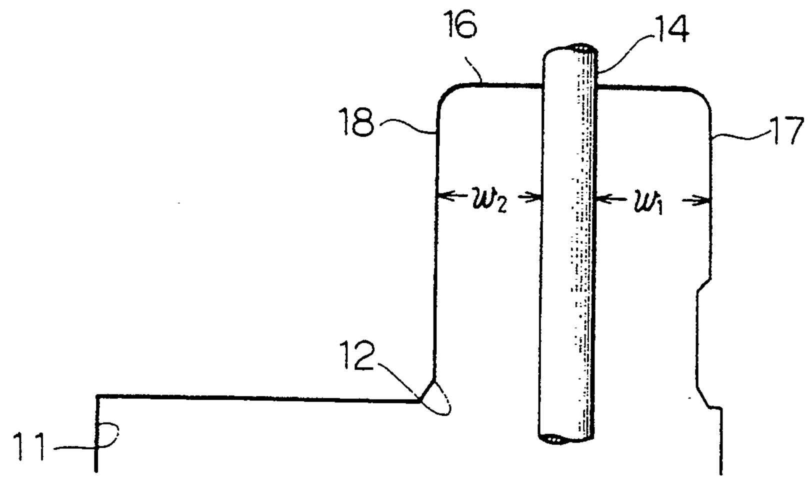

FIG.4

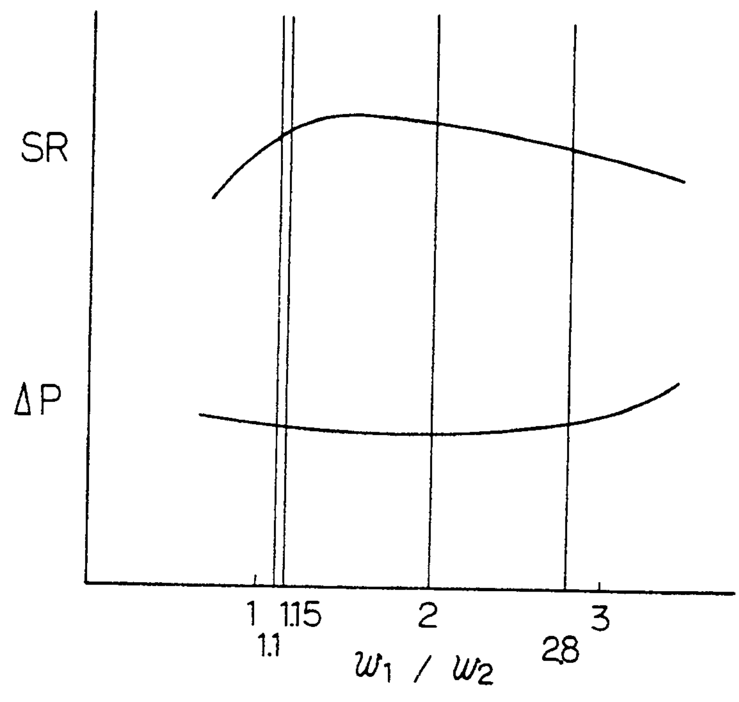

FIG.5

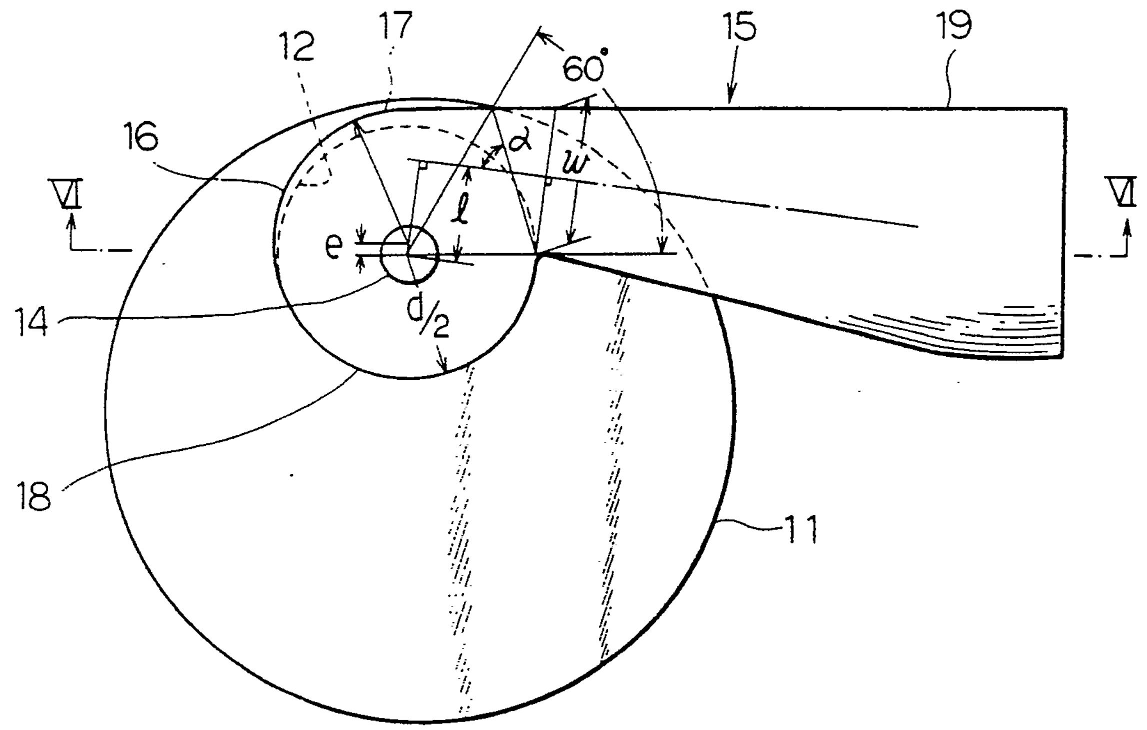

FIG.6

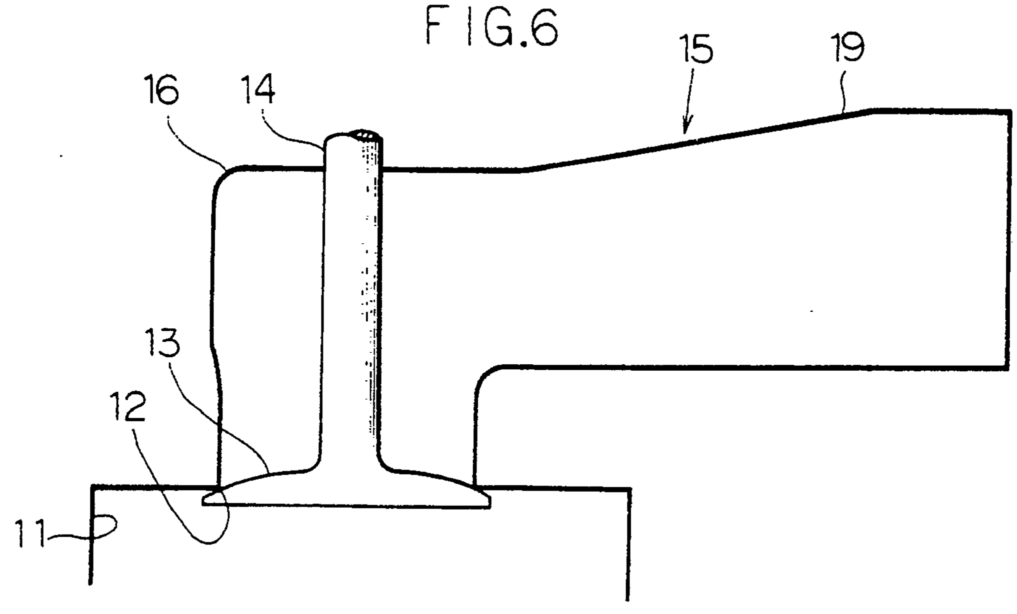

FIG.7

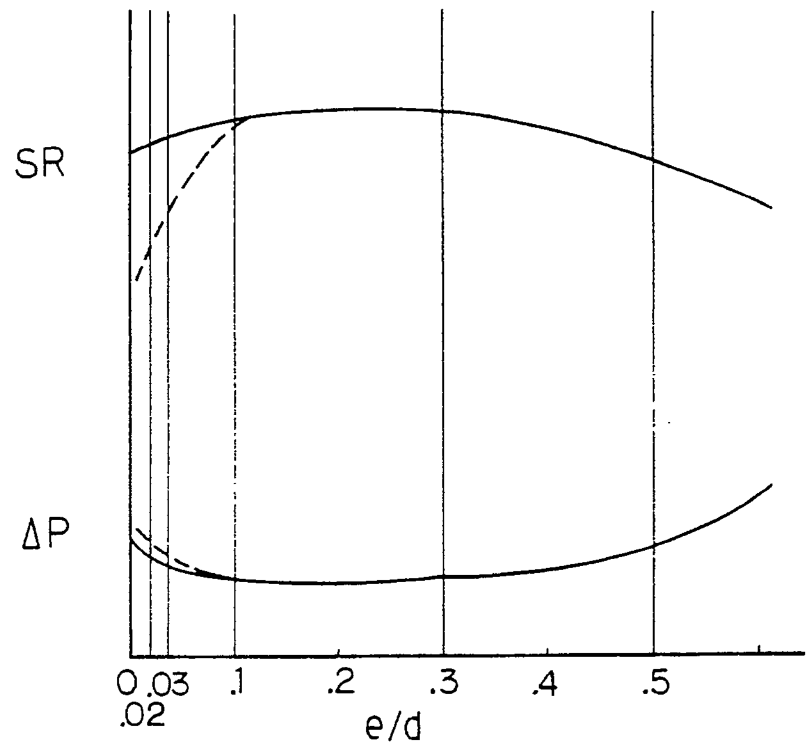
SR
ΔP
0
.02
.03
.1
.2
.3
.4
.5
e/d

FIG.8

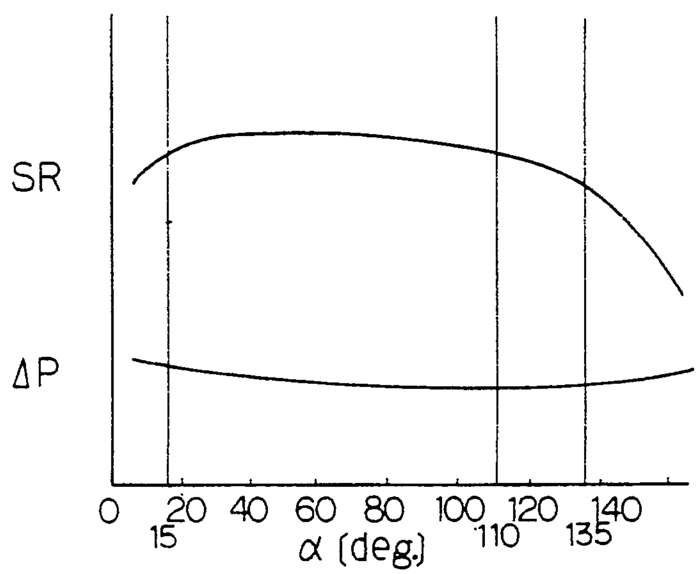
SR
ΔP
0
15
20
40
60
80
100
110
120
135
140
α (deg.)

FIG.9

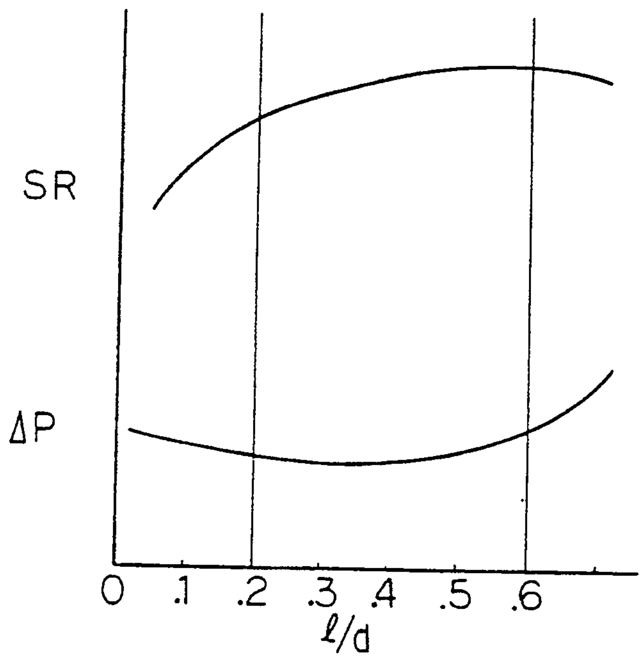

FIG.10